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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/820,791	04/09/2004	Shuho Motomura	Q81014	8726

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EXAMINER

BAREFORD, KATHERINE A

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 11/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/820,791

Applicant(s)

MOTOMURA, SHUHO

Examiner

Katherine A. Bareford

Art Unit

1762

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 October 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Claims 1-7 are canceled

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The amendment of October 4, 2006 has been received and entered.

With the amendment, claims 1-7 are canceled, and new claims 8-14 are provided for examination.

Claim Objections

2. The objections to claims 1 and 4 are withdrawn, due to the cancellation of the claims in the amendment of October 4, 2006.

Double Patenting

3. The rejection of claims 1 and 4 on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 11 and 13-15 of U.S. Patent No. 6,960,372 is withdrawn due to the cancellation of claims 1 and 4 in the amendment of October 4, 2006.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the

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art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 9-11 and 13-14 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

In new claims 9 and 13 the claims provide that "the drying is carried out by moving the substrate at a speed so that the uneven drying of the coated surface caused by the eddy of the downflow gas at the surface is reduced." The Examiner has reviewed the disclosure as originally filed for support for this amendment, and at page 7 of the specification, it is indicated that "unevenness in drying can be prevented because places exposed to an air current of a running-around downflow in a clean room are uniformized". This indicates that unevenness is prevented, and does not specifically refer to "eddy of the downflow". Thus, there is no support for "reducing" unevenness of drying caused by "the eddy of the downflow gas at the surface", and the new claims 9 and 13 contain new matter. Applicant, in the amendment of October 4, 2006 provides no indication where support for the new claims 9 and 13 can be found in the disclosure as originally filed.

The other dependent claims do not cure the defects of the claims from which they depend.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 9-11 and 13-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 9 and 13 require "the drying is carried out by moving the substrate at a speed so that the uneven drying of the coated surface caused by the eddy of the downflow gas at the surface is reduced." However, it is unclear as to what the uneven drying is "reduced" compared to. Is it compared to a drying without any movement, a drying with movement in the same direction, drying facing upwards, etc?

The other dependent claims do not cure the defects of the claims from which they depend.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 8 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Motomura (US 2003/0064159).

Claims 8 and 12: Motomura teaches a photomask manufacturing method. Paragraph [0050]. The photomask manufacturing method includes a resist coating process. Paragraph [0050]. The resist liquid is coated on a substrate in a clean room with a downflow of a gas. Paragraph [0013]. The resist coating includes rising by a capillary phenomenon a resist coating liquid stored below a coating surface of the substrate held facing downwards. Figures 1 and 7 and paragraphs [0087] – [0097]. The risen coating liquid is brought into contact with the coating surface via a nozzle. Figures 1 and 7 and paragraphs [0087] – [0097]. The resist film is coated on the coating surface of the substrate by moving the substrate in a direction to make the nozzle scan along the surface. Paragraphs [0087]-- [0097] and figures 1 and 7. Motomura teaches that the substrate is moved at a constant speed during coating by a control unit. Paragraph [0097]. Thus, the substrate would move at a “predetermined speed”. As to drying while moving the substrate in the opposite direction to the direction of movement in the coating step, this would be an inherent part of the process. As shown in figure 1, the substrate is positioned for coating in base position A. Figure 1 and paragraph [0087]. Then the substrate is coated by scanning, which is shown in figure 1 to have moved the substrate over the coating apparatus at 47. Figure 1 and paragraphs [0087] – [0097] (thus moving the substrate 19 to the left to the position where 19 is shown in solid lines). At the end of the coating process, the substrate is moved to the

drying apparatus 21, which requires reversing the direction of the substrate back to position A. Figure 1 and paragraph [0099] – [0100], as drying apparatus 21 is shown in the location on the side of the coating apparatus where position A is located, and to get to that position the substrate would move to the right from the position where 19 is shown in solid lines to position A). At least some drying would occur between the time of the coating and reaching the drying apparatus 21, because the substrate would be exposed to the atmosphere.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 9-11 and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Motomura as applied to claims 8 and 12 above, and further in view of Japan 2002-136915 (hereinafter '915).

Motomura teaches all the features of these claims except the speed of movement of the substrate, and that the speed is such to reduce uneven drying caused by the eddy of the downflow gas (claims 9, 13).

However, '915 teaches a process for capillary coating of a resist coating liquid onto a moving substrate. See the Abstract, paragraphs [0009] and [0022] and figures 1, 5 and 7. '915 teaches that a desirable speed of movement of the substrate in this process is 0.1 to 50 m/min. See the abstract.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Motomura to use the speed of movement suggested by '915 in the coating process with an expectation of desirable smooth coating application because Motomura teaches a desirable capillary coating and drying method and '915 teaches conventional speeds of movement of the substrate in a capillary coating process. One of ordinary skill in the art would be suggested to optimize within the range taught by '915 to find the optimum speed, as one of ordinary skill would desire to discover the optimum conditions. See *In Re Aller*, 220 F.2d 454, 105 USPQ 233 (CCPA 1955). Given the optimum conditions for coating, one of ordinary skill would be suggested to use similar speeds of movement when moving back to the original position (as discussed with claims 8 and 12) so that the substrate and coating are not disturbed from the speeds acceptable for movement when coating. While the range of claim 11 only extends to 0.08 m/min, it would be within the range suggested for movement as regard to claims 10 and 14, because one of ordinary skill in the art would be suggested to use similar speeds, and 0.08 would be similar to 0.1 m/min as taught by '915 for coating. As to the speed being such that uneven drying of the coating caused by the eddy of the downflow gas being reduced, the speeds suggested by '915 would be in the range

taught by dependent claims 10 and 14 as providing such reduced drying (1.5 m/min or lower), and therefore, the reduction in uneven drying would be another advantage that would flow naturally from following the suggestion of the prior art, and, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Response to Arguments

12. Applicant's arguments filed October 4, 2006 have been fully considered but they are not persuasive.

Applicant argues that Motomura specifically teaches that the air current generating apparatus 21 is set at the coating end position (paragraph [0099]), and thus, applicant argues, the drying step can begin immediately after the coating step without having to move the substrate to the drying apparatus, or back to position A. In the second and third embodiments, applicant argues, the drying apparatus is provided alongside with the nozzle, and thus, again, the substrate is not moved to the drying means. Furthermore, Motomura in paragraph [0107], also refers to "such convenience can be provided that after end of coating, the operation can immediately proceed to the step of drying the resist film without transporting the photomask blank 20." Therefore, according to applicant, it would not have been obvious for one of ordinary skill in the

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art to modify Motomura to have the substrate moved in the opposite direction, and it is contrary to the convenience emphasized in Motomura. Moreover, applicant argues, Motomura also describes drying while preventing downflow from turning into the resist film by using suppression means such as air current generating apparatus 21 or mask 64, which is not employed by the present invention, instead using the opposite direction movement of the substrate to reduce non-uniformity of the surface.

The Examiner has reviewed applicant's arguments, however, the rejection is maintained. While Motomura describes the "vicinity of the air current generating apparatus 21" as the location of the coating end position, Motomura, in Figure 1 and paragraph [0087] specifically shows the board in position A (on the same side of nozzle 47 as the air current generating apparatus 21) to the right of the nozzle ^{before coating} 47. Then in paragraphs [0087] – [0097], Motomura describes moving the board over the nozzle 47 to coat the board (that is moving to the left on the nozzle as shown in Figure 1). Therefore, to get to the "coating end position" of paragraph [0099] in the vicinity of apparatus 21, the board will have to be moved in the opposite direction (to the right as shown in Figure 1) back over the nozzle towards position A and apparatus 21 when the inherent drying referred to by the Examiner in the rejection above will occur. This does not contradict Motomuras reference to "coating end position" because this movement by the board over the nozzle and back to the position A can all be considered part of the coating operation. Applicant argues that the apparatus 21 located at the "coating end position" would mean that the drying can begin without having to move the substrate

to the drying apparatus or back to position A. However, this would contradict the actual positions and descriptions of movement identified in Motomura, where in Figure 1, position A and the apparatus 21 are shown in the same area on the same side of the nozzle. Thus, while applicant argues that it would not have been obvious for one of ordinary skill in the art to modify Motomura to have the substrate moved in the opposite direction, and it is contrary to the convenience emphasized in Motomura, it is the Examiner's position that Motomura is not modified, but in fact, inherently shows the movement in the opposite direction, whether it is more convenient or not. Moreover, as to applicant's argument that Motomura also describes drying while preventing downflow from turning into the resist film by using suppression means such as air current generating apparatus 21 or mask 64, which is not employed by the present invention, instead using the opposite direction movement of the substrate to reduce non-uniformity of the surface, there is nothing in the claims as worded that prevents a later drying from occurring after drying that occurs from the movement in the opposite direction.

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katherine A. Bareford whose telephone number is (571) 272-1413. The examiner can normally be reached on M-F(6:00-3:30) with the First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone numbers for the organization where this application or proceeding is assigned are (571) 273-8300 for regular communications and for After Final communications.

Other inquiries can be directed to the Tech Center 1700 telephone number at (571) 272-1700.

Furthermore, information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


KATHERINE BAREFORD
PRIMARY EXAMINER